REMARKS

Reconsideration of the application is requested. To address matters issued under 35 USC 112, Claim 12 was amended for wording matters.

Rejection Under 35 USC 112, second paragraph

The Office Action rejected Claim 12 on the grounds that the claim contained certain terms that rendered the claim indefinite. In view of the modifications made above, the rejection is believed overcome. Reconsideration is requested.

Rejections Under 35 USC 102

1. Rejection of Claims 4-13 under 35 USC 102 over U.S. Pat. No. 5,998,319 (Hintermeyer).

The Office Action rejected Claims 4-13 under 35 USC 102 over U.S. Pat. No. 5,998,319 (Hintermeyer). Hintermeyer is not prior art under 35 USC 102(e). Applicants' priority date for this Application is October 20, 1997- before June 10, 1998, the 35 USC 102(e) and the 35 USC 371 dates of Hintermeyer. Applicants submitted a translation of the priority document on January 16, 2002. Reconsideration is requested.

2. Rejection of Claims 4-13 under 35 USC 102 over U.S. Pat. No. 5,919,719 (Sato)

The Office Action rejected Claims 4-13 under 35 USC 102 over U.S. Pat. No. 5,919,719 (Sato). The rejection should be withdrawn in view of the remarks below.

It is well settled that a 35 USC 102 rejection must rest upon the literal teachings of the reference and that the teachings must teach every element of the claimed invention in as complete detail as is contained in the claim. In order for prior art reference to anticipate claim, the reference must disclose each and every element of claim with sufficient clarity to prove its existence in prior art. The disclosure requirement under 35 USC 102 presupposes knowledge of one skilled in the art, but such presumed knowledge does not grant license to read into prior art reference teachings that are not there. See *Motorola Inc. v. Interdigital Technology Corp.* 43 USPQ2d 1481, 1490 (1997 CAFC).

Applicants' invention as encompassed by Claim 4, is directed to a silicon nitride material comprising sintering aids that include at least Al_2O_3, and silicon dioxide, in a grain boundary phase, wherein the silicon dioxide in the grain boundary

phas and the sintering aids including at least Al_2O_3. The grain boundary phase have a molar ratio of silicon dioxide to silicon dioxide and sintering aids including at least Al_2O_3 that is > 60% and the oxide nitride content is < 1%.

Sato is based on the discovery that a silicon nitride sintered body obtained by mixing an oxide of a rare earth element such as yttrium (Y) and Al_2O_3 with a silicon nitride powder and firing the mixture, by precipitating Si (elemental silicon) in the tissue of sintered body, strength at a high temperature and toughness can be increased (See Summary of the Invention). Sato discloses a sintered body containing a β-silicon nitride crystal phase as a main crystal phase and containing a rare earth elemental component and an aluminium component in a grain boundary, in which the intensity ratio (X_2/X_1) of a Si peak X_2 at 521 cm^{-1} to a silicon nitride peak X_1 at 206 cm^{-1} detected by a Raman spectrochemical analysis method is 0.2 to 3.

Sato does not anticipate Applicants' invention. The Office Action relied on the compositions in Table 1 in rejecting Applicants' invention. Table 1 includes Examples according to Sato's invention as well as comparative examples. With respect to the examples, the molar ratio of silicon dioxide to the sintering aids is from 20% (sample No. 19) to 53.3% (sample No. 16). Most compositions have a ratio of 33% (samples No. 2227) or 40% (samples No. 7-9). This means compositions according to Sato's invention have a molar ratio much lower than 60% being the lower limit in Applicants' claims. This also means that these compositions do not anticipate Applicants' invention. Reconsideration is requested.

With respect to the comparative examples, there is only one composition having a molar ratio of silicon dioxide to the sintering aids that is >60% (sample No. 1; 63.6%). However, this disclosure does not disclose Applicants' invention in every detail as is required by Applicants' claims. That is, Sato does not disclose a silicon nitride material comprising sintering aids including at least Al_2O_3, and silicon dioxide, in a grain boundary phase, wherein the silicon dioxide in the grain boundary phase and the sintering aids including at least Al_2O_3 in the grain boundary phase have a molar ratio of silicon dioxide to silicon dioxide and sintering aids including at least Al_2O_3 that is > 60% and the oxide nitride content is < 1%. Reconsideration is requested.

New Claims 14-23 are also nov l. Sato does not teach every elem nt of the invention encompassed by new Claims 14-23.

Rejections Under 35 USC 103

1. Rejection of Claims 4-13 over Hintermeyer

The Office Action rejected Claims 4-13 over U.S. Pat. No. 5,998,319 (Hintermeyer). In view of the comments above, Hintermeyer is not prior art in this case. Reconsideration is requested.

2. Rejection of Claims 4-13 over Sato

The Office Action rejected Claims 4-13 over Sato. The rejection should be withdrawn in view of the remarks below. It is well established that to establish a *prima facie* case of obviousness, the USPTO must satisfy all of the following requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references (*In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988)). Second, the proposed modification must have had a reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made (*Amgen v. Chugai Pharmaceutical Co.* 18 USPQ 2d 1016, 1023 (Fed Cir, 1991), *cert. denied* 502 U.S. 856 (1991)). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the claims (*In re Wilson*, 165 USPQ 494, 496, (CCPA 1970)). In view of the modifications above, the Office Action did not establish a *prima facie* case of obviousness.

Applicants' invention relates to a silicon nitride material comprising sintering aids including at least Al_2O_3, and silicon dioxide, in a grain boundary phase. The silicon dioxide in the grain boundary phase and the sintering aids including at least Al_2O_3 in the grain boundary phase have a molar ratio of silicon dioxide to the silicon dioxide and sintering aids including at least Al_2O_3 that is > 60% and the oxide nitride content is < 1%. Applicants' invention is based on the discovery that the silicon material has, regardless of the way in which it is produced, a high corrosion resistance towards acids if it has a very high SiO_2 content and formation of silicon oxide nitride is avoided (Spec., p. 2, 3rd full paragraph).

On of ordinary skill in the art following the teachings of Sato would not have been motivated to modify Sato, make Applicants' Invention, and expect the results Applicants' have obtained. Sato's sintered body containing a β-silicon nitride crystal phase as a main crystal phase and containing a rare earth elemental component and an aluminium component in a grain boundary would not have made one of ordinary skill in the art modify Sato, make Applicants' invention, and expect the results Applicants have obtained. Reconsideration is requested.

With respect to new Claims 14-23, Applicants submit that one of ordinary skill in the art following the teachings of Sato would not have been motivated to modify Sato, make Applicants' invention, and expect the results Applicants have obtained.

In view of the modifications and remarks above, allowance of all pending claims is earnestly requested.

Respectfully submitted,

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MARKED UP VERSION TO SHOW CHANGES MADE IN THE CLAIMS:

Claim 12 has been amended as follows:

12. (Amended) The silicon nitride material of Claim 12~~14~~, wherein the reactive additive is selected from the group consisting of SiC, TiN, $MoSi_2$, TiCN and HfO_2 and additives which form mixed crystals with the Si_3N_4.

As explicitly set forth in **37 C.F.R. Section 1.121(c)(1)(il), last sentence**, a marked up version does not have to be supplied for an added claim or a cancelled claim as it is sufficient to state that a particular claim has been added, or cancelled, and this has been so stated in the Amendment.

In particular, in this case, Claims 14-23 have been newly added.

Bayer

Fax Coversheet

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NOTICE